

REMARKS AND RESPONSES

This paper is in response to the Office Action of September 22, 2005. The due date for response extends to December 22, 2005.

Claims 1, 3, 5, 7, 10, 12 and 14 have been amended, and claim 1 has been amended to include the features of claim 2. Claim 2 has been canceled without prejudice. Dependent claims 16-18 have been newly added. Claims 1 and 3-18 remain pending in the present application. Support for the amendments is found in the specification and claims as filed. Accordingly, the amendments do not constitute the addition of new matter. Reconsideration of the application in view of the foregoing amendments and following comments is respectfully requested.

Specifications

The term “resistors 111 and 121” in page 3, line 14 of Specification has been amended as “resistors 111 and 112” to eliminate typographical errors.

Claim Objections

With respect to paragraph 2 of the Office Action, claims 7, 9 and 10 are objected to due to informalities thereof.

The term “an terminal voltage” in claim 7 has been amended as “the terminal voltage” to eliminate the informality objection.

The term “an invented output end” in claim 10 has been amended as “an invented input end” to eliminate the informality objection.

The term “an drive IC” in claim 14 has been amended as “a drive IC” to eliminate the informality objection.

Claim Rejections - 35 U.S.C. § 102

With respect to paragraph 4 of the Office Action, claims 1-5 are rejected under 35 U.S.C. §102(b) as being anticipated by Tabata (US 4,914,540).

Claim 1 has been amended to include the features of claim 2, and claim 2 has been canceled without prejudice.

Of rejected claims, only the amended claim 1 is independent.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.”

Verdegaal Bros. V. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053(Fed. Cir. 1987). “The identical invention must be **shown in as complete detail** as is contained in the ...claim.” Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). (MPEP 2131)

As defined by the amended claim 1, an overvoltage protective device in parallel connection with a direct-current (DC) motor includes a voltage-dividing circuit and a control unit. The voltage-dividing circuit has one end electrically connected to an input voltage of the DC motor, and the other end thereof connected to ground. The control unit is in parallel connection with one part of the voltage-dividing circuit, and for accessing a voltage level of the part of the voltage-dividing circuit to further drive the DC motor, wherein when a voltage level of the part is larger than a reference voltage, the control unit stops driving the DC motor. That is, **the control unit** decides whether or not to drive the DC motor **by accessing the voltage level of the part of the voltage-dividing circuit so as to protect DC motor.**

However, Tabata discloses an overvoltage-protective device for protecting a **switching element**, rather than a **DC motor**. In particular, Tabata discloses that “the gate (7) of **transistor (4)** is applied with the voltage (V2) obtained by dividing the voltage (V1) applied to the **switching element (S)**, which is a device to be **protected**, by the **voltage-dividing resistors 8 and 9**, so that a current path for bypassing the switching element (S) to be protected is defined across the terminals (T1) and (T2) upon conduction of the transistor (4).” See FIG. 4 and col. 3, lines 52-59 of Tabata. Moreover, Tabata is silent about whether the transistor (4) could drive the DC motor (A) or not. Accordingly, the control unit, as recited in the amended claim 1, would not be anticipated by the transistor (4).

Since Tabata fails to anticipate an identical invention as contained in the amended claim 1, the novel features of the amended claim 1 produces new and unexpected results and hence are unobvious and patentable over Tabata.

In addition, insofar claims 3-5 depend from claim 1, these claims add further limitations thereto. Thus, claims 3-5 of the present application are also novel and unobvious over Tabata.

With respect to paragraph 5 of the Office Action, claims 1, 5, 6 and 7-8 are rejected under 35 U.S.C. §102(b) as being anticipated by Xi (US 6,879,120). For the record, the Office is noticed that reference Xi (US 6,879,120) was improperly identified as a section 102(e) reference. This response will assume Xi is section 102(e) art, and the Examiner is requested to make a note of the same.

Of rejected claims, only claims 1 and 7 are independent.

Claim 1 has amended to include the features of claim 2, which is not anticipated by

Xi (US 6,879,120). Claims 5 and 6 also depend from claim 1. Therefore, the rejections under 35 U.S.C. §102(e) on claims 1, 5 and 6 have been rendered moot.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros. V. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053(Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ...claim.” Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). (MPEP 2131)

As defined by the amended claim 7, an overvoltage protective device of DC motor having a plurality of power switches includes two resistors and a micro control unit (MCU) driver. A first resistor has one end electrically connected to an input end voltage of the DC motor. A second resistor has one end electrically connected to the other end of the first resistor, and the other end thereof connected to ground. The micro control unit (MCU) driver has a plurality of output terminals driving the power switches, and for accessing a terminal voltage of the second resistor. When the terminal voltage of the second resistor is larger than a reference voltage, the output terminals stop driving the power switches. That is, the **MCU driver** decides whether or not to drive the power switches of the DC motor by accessing the terminal voltage of the second resistor so as to protect DC motor.

However, Xi fails to disclose an overvoltage protective device of DC motor, wherein the **MCU driver** decides whether or not to drive the power switches of the DC motor by accessing the terminal voltage of the second resistor so as to protect DC motor as recited in the amended claim 7. In particular, Xi discloses that “the speed control circuit (11) **validates** the above control signal when the voltage level (**Vb**) of the output terminal (Out) is **less than** a predetermined value (the L-level). As a result, the switching elements SW1 and SW2 are alternately turned ON/OFF. When the voltage level (**Vb**) of the output terminal (Out) is **not less than** a predetermined value (the H-level), the speed control circuit (11) **invalidates** the above control signal, and turns off the switching elements SW1 and SW2.” See FIG. 1 and col. 4 lines 41-49 of Xi. Moreover, “The output voltage (**Vo**) of the **differential amplifier** (AMP) is obtained by the following formula: $V_o = -(V_i - V_a) \cdot (R_{13}/R_{15})$. The voltage level **Vb** of the control input terminal 22b is obtained by the following formula: $V_b = -V_a(R_{13}/R_{15}) \cdot V_i + V_a(R_{13}/R_{15})$ ”. See also col. 5, lines 36-39 of Xi. Therefore, the speed control circuit (11) decides whether or not to drive the DC motor by accessing the voltage level **Vb** modified by the **differential amplifier** (AMP), rather than by accessing the voltage

level Va itself. That is to say, the speed control circuit (11) decides whether or not to drive the DC motor by accessing the voltage level Vb modified by the differential amplifier (AMP), rather than by accessing the terminal voltage of the second resistor as recited in the amended claim 7.

Since Xi fails to anticipate an identical invention as contained in the amended claim 7, the novel features of the amended claim 7 produces new and unexpected results and hence are unobvious and patentable over the prior art of record.

In addition, claim 8 depends from claim 7, and adds further limitations thereto. Thus, claim 8 of the present application is also novel and unobvious over the prior art of record.

Accordingly, Applicant respectfully submits that the rejections under 35 U.S.C. §102(e) should be withdrawn. Reconsideration and withdrawal of these rejections is respectfully requested.

Claim Rejection - 35 U.S.C. §103

With respect to paragraphs 6 and 7 of the Office Action, claims 9-15 are rejected under 35 U.S.C. §103(a) as being unpatentable over Xi (US 6,879,120) in view of Nelson (US 5,087,865).

Of the rejected claims, only claims 9 and 14 are independent.

When applying 35 U.S.C. §103, the following tenets of patent law must be adhered to:

- (A) The claimed invention must be **considered as a whole**;
- (B) The references must be considered as a whole and must **suggest the desirability** and thus the obviousness of making the combination;
- (C) The references must be **viewed without the benefit of impermissible hindsight vision afforded by the claimed invention** and
- (D) **Reasonable expectation of success** is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986). (MPEP §2141)

If proposed modification would render the prior art invention being modified **unsatisfactory for its intended purpose**, then there is **no suggestion or motivation** to

make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) (MPEP 2143)

As defined by the claim 9, an overvoltage protective device of DC motor includes two voltage-dividing circuits, a control unit and an operation amplifier. A **first voltage-dividing circuit** has one end electrically connected to an input end voltage of a DC motor, and the other end thereof connected to ground. A **second voltage-dividing circuit** has one end electrically connected to a reference voltage end, and the other end connected to ground. A control unit is responsible for controlling start of the DC motor. An operation amplifier has a non-inverted input end electrically connected to the first voltage-dividing circuit, an inverted input end thereof electrically connected to the second voltage-dividing circuit, and an output end thereof electrically connected to the control unit. When a voltage at the non-inverted input end of the operation amplifier is larger than a voltage at the inverted input end, the operation amplifier outputs an overvoltage interrupt signal to the control unit, and the control unit stops driving the DC motor. Therefore, the operation amplifier has **both** non-inverted and inverted input ends thereof electrically connected with **voltage-dividing circuits**.

As defined by the amended claim 14, an overvoltage protective device of DC motor having a plurality of power switches includes four resistors, a drive IC and a comparator. A **first resistor** has one end electrically connected to a voltage input end of the DC motor. A **second resistor** has one end thereof connected to the other end of the first resistor, and other end thereof connected to ground. A **third resistor** has one end connected to a reference voltage end. A **fourth resistor** has one end electrically connected to the other end of the third resistor, and the other end thereof grounded. The drive IC has a plurality of output terminals for respectively driving the power switches. A comparator has a non-inverted input end connected between the first resistor and the second resistor, an inverted input end thereof electrically between the third resistor and the fourth resistor, and an output end thereof electrically connected to the drive IC. When a voltage at the non-inverted input end is larger than a voltage at the inverted input end, the comparator outputs an overvoltage interrupt signal to the drive IC, and the output terminals then stops driving the power switches. Therefore, the operation amplifier has **both** non-inverted and inverted input ends thereof electrically connected with **between two resistors** (or voltage-dividing circuits).

However, Xi **fails** to suggest the **desirability** to be **modified** as a speed control circuit having a differential amplifier (or comparator) with **both** inverted input end and non-inverted input end thereof electrically connected with voltage-dividing circuits, or to be **combined** with the voltage-dividing circuit disclosed by Nelson. In particular, Xi discloses a voltage-dividing circuit including the resistor R11 and R12, and that “the above control voltage signal (Vi) is the voltage signal with the level thereof **continuously changed** accordingly to the **temperature** in a housing of an OA appliance, The reference voltage signal Va is the voltage corresponding to the preset temperature of detection ...”. See FIG. 1 and col.5 lines 3-12 of Xi. The reference voltage signal Va is determined by the voltage-dividing circuit (including the resistor R11 and R12), which is a evidence that the inventors of Xi knew how to set a divided voltage value for an operation amplifier by using a voltage-dividing circuit. Nevertheless, the control voltage signal (Vi) is **not** determined by **another** voltage-dividing circuit, but accordingly to the **temperature** in a housing of an OA appliance. Accordingly, Xi has suggested a **tendency not to** utilize a voltage-dividing circuit to set the control voltage signal (Vi), **far from** suggesting the **desirability** to utilize a voltage-dividing circuit set the control voltage signal (Vi). That is, Xi **fails** to suggest the **desirability** that Xi and Nelson be combined in the manner suggested by the Office Action.

Assuming arguendo that the Examiner’s combination of Xi and Nelson is proper, the references would still produce a **poor** combination **unsatisfactory** for the intended purpose of Xi. In particular, Xi discloses its intended purpose in ABSTRACT, “there is provided a brushless DC fan motor which can ..., and efficiently adjust the temperature in a housing for electronic appliances when radiating the heat in the housing.” Moreover, “when the **temperature** in the housing for OA appliance **increases**, and the temperature detecting output voltage by the thermistor is dropped, the voltage level of the control voltage signal (Vi) inputted in the input terminal (IN) of the speed control circuit (11) is **dropped**.” See also FIG. 1 and col. 5, line 65 – col. 6, line 3 of Xi. The combination of Xi and Nelson suggests that a **voltage-dividing circuit** be added to be electrically connected with the inverted input end (—) of the operation amplifier (AMP). Accordingly, the voltage signal (Vi), at the inverted input end, is **divided** by the voltage-dividing circuit and is **smaller** than an original voltage outputted by the thermistor. A **modified** dropped voltage signal (Vi), which is **divided** by the voltage-dividing circuit, would **not** reflect a **true** increased **temperature** in the housing for OA appliance. The speed control circuit (11) would **not** function **efficiently** to adjust the **temperature** in a housing for electronic appliances **with a false** voltage signal (Vi).

Since Xi **fails** to suggest the **desirability** to be combined with Nelson in the manner suggested and even if they are combined, such combination is **unsatisfactory** for the intended purpose of Xi, the prior art of record fails to teach all features defined by claims 9 and 14 of the present application. Accordingly, the novel features of claims 9 and 14 produce new and unexpected results and hence are unobvious and patentable over these references.

In addition, insofar claims 10-13 depend from claim 9 and claim 15 depends from claim 14. These claims add further limitations thereto. Thus, claims 10-13 and 15 of the present application are also novel and unobvious over the prior art of record. Accordingly, Applicant respectfully submits that the rejections under 35 U.S.C. §103(a) should be withdrawn.

Reconsideration and withdrawal of this rejection is respectfully requested.

New claims

Dependent claims 16-18 have been newly added.

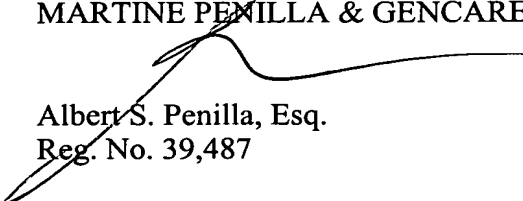
As stated above, independent claim 1 is unobvious and patentable over the prior art of record. Dependent claims 16-18 depend from claim 1, and add further limitations thereto. Thus, claims 16-18 of the present application are also novel and unobvious over the prior art of record.

Conclusions

For all of the above reasons, applicants submit that the specification and claims are now in proper form, and that the claims define patentably over prior arts. Therefore applicants respectfully request issuance for this case at the Office Action's earliest convenience.

If the Examiner has any questions concerning the present amendment, the Examiner is kindly requested to contact the undersigned at (408) 749-6903. If any other fees are due in connection with filing this amendment, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No. JLINP171/TLC). A duplicate copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
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